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Title: IMPROVED DISPOSABLE SELF-SHIELDING HYPODERMIC SYRINGE. ;

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ABSTRACT:

A syringe (10) has a needle (12), body (14), plunger (16), seal (18) and protector case (20). Body (14) is substantially rectangular in cross section. Body (14) is slidable in protector case (20) between first, second and third positions in which fingers on the case (20) rest in different pairs of grooves in body (14). FIGURE 1 shows the syringe (10) with body (14) being moved towards the second position with needle (12) extending through V-shaped notch. The second position indicates when the needle has been extended the desired amount for proper insertion into a vein. In the third position, movement of body (14) and case (20) are prevented without the destruction of the case (20) in order to give protection against accidental stab wounds.

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(54) Improved disposable self-shielding hypodermic syringe

Sicherheitswegwerfspritze

Seringue de sécurité à usage unique

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Description

INTRODUCTION

The present invention is, in general, an improved hypodermic syringe or medical fixture and, there is described herein, a stackable, disposable, non-reusable, hypodermic syringe with features to:

- prevent users or patients from accidentally stabbing themselves before or after use;
- insert the needle with preferred orientation;
- render it unusable after use;
- measure precisely amounts of injected or withdrawn fluid; and
- retract the needle with one finger after use.

Some of the foregoing features are available in a double-needle embodiment.

BACKGROUND OF THE INVENTION

The development of safe medical syringes and procedures for using them have long been a matter of concern, especially to the medical field. Many medical procedures, such as the transfusion of blood and the administration of insulin in some circumstances, require the use of needles and syringes, with their attendant hazard of accidental scratch or puncture. Recently, the risk seems to have increased dramatically of contracting virulent and fatal or near-fatal infections during legitimate medical procedures using needles, and the general public as well as the medical profession has demanded safer products and procedures.

Efforts to minimize the risk of accidental infection have been made for several decades. Some representative efforts are:

La Marche U.S. Patent 1, 921,034 discloses a protector case for a syringe or conventional type, which allows for the needle to be exposed the correct amount for the type of shot to be given, and to be retracted after use to protect others from being accidentally punctured thereby.

Bastien 2, 571, 653 discloses a syringe body encased in a slidable protector case, having built-in detents to hold the needle in a retracted position prior to and following use, while permitting the needle to be exposed the correct length for the purpose.

Tschischeck 2,586, 581 discloses an add-on magnifying attachment for syringes. It has no relevance to the present invention, except to disclose one means of making the scale more readable and the dosage more accurate.

Norgren 3,943,927 discloses an injection device to be carried by persons having allergic reactions to insect or snake bites, or bee stings, where antitoxins or other emergency remedies need to be administered immediately under conditions of great physical or emotional stress. It has little relevance to the present invention.

Ethington 4,018,223 discloses a tactile detent dosage metering device for use by persons with impaired vision.

Chen 4,728,321 discloses a means to render a needle unfit for further use, by placing thereon a syringe cap and permanently cementing it in place.

Bogan 4,738,663 discloses a removable protective cover for the needle of a syringe.

Leopoldi et al 4,743,234 discloses a syringe with needle shield which provides protection to users when the shield is moved to cover the needle. The mechanism provides detent positions in both extended and retracted positions, but not a permanently locked position.

None of the above references disclose, either singly or in combination, the structure and attendant features of the present invention.

Reference is also made to US-A-4758231, which is used as a basis for the preamble of claims 1 and 9. FIGURE 21 shows an inner cylinder 162 of syringe 160, said cylinder having a hexagonal section with contiguous side walls. Projecting outwardly from the distal end of cylinder 162 are ramps 164,166.

BRIEF DESCRIPTION OF THE PRESENT INVENTION

According to the present invention there is provided a medical fixture or syringe for collecting, holding and transferring fluid, including a body and a protector case, wherein the body has a first end and a second end with the first end being adapted to receive a needle and has a bore communicating with the first end, and the protector case slidably containing the body, the body and the protector case comprising a detent arrangement for holding the body within the protector case in one position wherein the needle is contained within the protector case and in another position wherein the needle is extended for use, said body having exterior axially extending projections or fins cooperable with, and slidably supporting the body on the internal surface of the protector case characterised by the protector case having an internal rectangular or non-circular cross section, the extremities of the projections or fins extending outwardly from the surface of the body defining a shape conforming to the internal cross-section of the protector case, and said protector case having an external rectangular or non-circular cross section.

Further according to the present invention there is provided a medical fixture or syringe for collecting, holding and transferring fluid, including a body and a protector case, wherein the body has a first and a second end with the first end being adapted to receive a needle, and the protector case slidably containing the body, the body and protector case incorporating a detent arrangement for holding the body within the protector case in one position wherein the needle is contained within the case

and another position wherein the needle is extended for use, said body having axially elongated projections or fins extending outwardly from the body, and wherein the protector case is slidable on said projections or fins of said body, characterised by

extremities of said projections or fins defining an external first rectangular cross-section to the body, said protector case having an external second rectangular cross-section, and an internal third rectangular cross-section complementary to said external first rectangular cross-section of said body, and the protector case includes side members having edges extending over edges of the body forming an open area in the protector case, the protector case having a U-shape and the protector case having a stop member adjacent the open area cooperating with a finger member on the body which extends through the open area and which can be engaged by a finger of the user to provide a positive stop to assist in preventing removal of the case from the body.

The basic embodiment may include a combination hypodermic syringe/protector case, which consists of four principal parts:

1. needle;
2. body;
2. plunger (and plunger seal); and
3. protector case.

The plunger (and the bore) can have the traditional circular cross-section or, preferably, any non-circular shape including rectangular or oval, which latter have several advantages, as enumerated hereinafter.

The shape defined by the extremities of the projections or fins extending outwardly from the surface of the body permits encasing the syringe in a simple U-shaped channel, which acts as a protector case and slide, in which the syringe body can slide either way to reach one of its several physical states. If the plunger has an oval or flat rectangular cross-section, the thickness of the combined syringe and protector case is substantially the same as that of a syringe of the same capacity or volume, but with a conventional structure. The protector case preferably includes inwardly pressing fingers which, mating with shallow grooves formed into the sides of the syringe body, form detent mechanisms, described more completely hereinafter. The protector case may also include a shaped cut-out, in a flexible section, which acts as a shield to protect persons from the needle point both before and after use. These features are described in more detail hereinafter.

Before use, the syringe body may be withdrawn from its functional position, and may be held in place by a first detent mechanism, so that the needle is protected by a shield incorporated into the protector case.

If desired, the needle can have thereon a removable shield of conventional design, fabricated of a shrinkable material such that the application of heat, microwave, chemical or other energy will shrink the shield into intimate contact with the needle. Further, the protector case itself can also have thereon an appropriately shaped removable shield fitting over the needle and thereof, of the same shrinkable material as the needle shield. After use, the shield(s) can be replaced on the protector case and/or the needle, carried to a point of central disposal, and treated with heat, microwaves, chemicals or other processes that will shrink them into intimate contact with the needle, rendering it unusable thereafter.

Alternatively, when the protector case is withdrawn to its permanent position, and is no longer to be used, a block of shrinkable or meltable material can be inserted into the cavity between the sides of the protector case, over the whole length of the needle, which then can be shrunk or melted into an amorphous mass over the needle, rendering it unfit and unavailable for further use.

To prepare the syringe for use, the needle and protector case shields are removed, if present. The syringe body is slid forward from its storage position within the protector case to a position as determined by a second detent mechanism, exposing the correct length of needle for desired insertion depth.

When the injection has been completed or the blood has been drawn, the needle is withdrawn by retracting the syringe to a third, permanent position, where it is held in place by a third detent mechanism from which it cannot be moved without intent and only with considerable difficulty.

To transfer drawn blood or serum from the syringe, a conventional stoppered specimen tube may be positioned in the shaped end of the protector case, with the stopper thereof adjacent to the needle tip. The tube is pressed transversely to the syringe body, forcing the flexible section of the protector case out of the way and permitting the stopper of the specimen tube to be forced onto the needle and the contents of the syringe emptied into the tube. This can be repeated as often as necessary, depending upon the number of specimens needed.

It is recognised by nurses and others who give shots regularly that a desired orientation of the needle when inserting it into a patient is with the tapered portion of the tip upwards, so that the depth of insertion can be gauged with respect to the needle opening and a blood vessel, for example. The rectangular shape makes it possible, during production, to automatically orient the needle with respect to the upper face of the syringe, so that the needle can be efficiently inserted, particularly under difficult light conditions, or with a struggling patient.

The benefits of embodiments of the present invention are several:

1. the protector case provides protection from accidental injury both before and after use, and during transfer of fluids to specimen tubes;
2. the detent mechanism provides positive positioning of the syringe prior to, during, and after use;
3. the rectangular structure has several advantages:

a. close packing of multiple numbers during shipping and storage;
b. automatic positioning of the needle with respect the syringe body; and thus
c. convenient positioning of the needle for most effective insertion thereof into a patient;
d. prevention of needle re-use by shrinkable shields or meltable blocks of material;

4. the rectangular or oval shape of the plunger and internal cavity makes it easier to find and read the dosage markings.

Other features can be added to the above basic embodiment which give additional advantages;
5. the plunger can have attached thereto an extension, parallel to and extending toward the needle, with tactile detent features or markings thereon, indicating the volume of fluid expelled, for use in giving metered doses in situations where vision is impaired (in a darkened room, for example);

sight-impaired persons with diabetes, for example, would also benefit by the use of such an instrument;

6. the syringe body can have a raised ridge on the needle end, so that the user can hold the syringe between thumb and middle finger and retract the syringe with the forefinger;
7. the protective case feature can be incorporated in a double-needle fixture, for use when multiple samples of a patient's blood, are to be obtained at the same time. A nurse or other medical person is at a substantial risk using a fixture of conventional design in this situation. With an unprotected needle fixture, one hand must be occupied in holding the first needle in a patient's arm while the other hand must withdraw one container from the second needle and reinsert another thereon, perhaps several times, leaving the needle exposed each time. Or, even a fixture with a protected needle requires that the collecting container be screwed onto the fixture, requiring precise manipulation in an awkward situation. With the present invention, the needle is covered by the protective case while one container is easily exchanged for another.

To recap, important features are:

1. an improved rectangular cross-sectional shape of the syringe body, reducing shrinkage and/or warpage due to non-uniform thickness of material;
2. protector case which keeps needle protected during storage, after use, and during transfer of fluid to specimen tubes;
3. first, second and third detent mechanisms for positive positioning of syringe and needle with respect to protector case, before during and after use; and
4. orientation of needle with respect to rectangular case to facilitate use in difficult situations;

Further improvements are:

1. rectangular shape of internal bore;
2. an improved structure to the shield or protector case, including:

a. a stronger structure with less possibility of twisting and/or warpage;
b. an improved shape to the nose thereof in one embodiment; and
c. an improved structure for the flexible nose portion of the original embodiment;

3. an improved finger-boss structure for the one finger withdrawal feature;
4. an improved and amplified detent mechanism;
5. a convenient means of applying identifying indicia to the syringe body:
6. an improved structure for the blood collection embodiment;
7. an improved structure to prevent withdrawing the plunger from the syringe body;
8. shields of shrinkable or meltable material to render needle reusable; and
9. tactile detent metered dosage mechanism for use by persons with impaired vision or in dimly lighted situations.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG.1 is an oblique isometric view of a syringe (being an embodiment falling outside the scope of the claims of the present invention), disclosing the interrelationship of the various parts.

FIGS. 2A and 2B are plan and profile views, respectively, of the syringe in its storage state before use.

FIGS. 3A and 3B are plan and profile views respectively, of the syringe in its extended states, ready for use.

FIGS. 4A and 4B are plan and profile views, respectively, of the syringe in its retracted state, following use.

FIGS. 5A and 5B are plan views of the syringe prior to, and during, insertion of the needle into a storage tube, respectively, for transfer of the fluid contents thereof.

FIG. 6 is a view of the syringe from the needle end

thereof.

FIGS. 7A-D discloses cross-sectional shapes of the syringe at sections A-B of FIG. 2B, transverse to the longitudinal axis thereof.

FIG. 8 discloses a double-needle fixture.

FIG. 9 discloses a tactile detent mechanism enabling use of the syringe in the dim light or by those with vision impairment.

FIGS. 10-17 relate to further improvements disclosed in this present application.

FIG. 10 discloses an improved shape of the syringe body in cross-section in accordance with the present invention.

FIG. 11 discloses an improved syringe protector case structure.

FIG. 12 discloses an improved structure of the flexible nose of the syringe protector case.

FIG. 13 discloses a second embodiment of the nose shape of the syringe protector case.

FIG. 14 discloses an improved syringe protector case providing a data recording area.

FIG. 15 discloses an improved finger-boss permitting one finger withdrawal of the syringe.

FIG. 16 discloses an improved structure for the detent mechanism.

FIG. 17 discloses an improved structure of a blood collection embodiment of the syringe.

FIG. 18 discloses an improved structure of syringe body to prevent accidental removal of the plunger from the body.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

Turning now to FIG. 1, we see a syringe 10, including needle 12, body 14, plunger 16, seal 18, and protector case 20.

Needle 12 is preferably a standard needle of diameter and length appropriate to the desired use, although the benefits may be realized with a needle of nearly any configuration. To obtain the benefits of needle orientation, as explained hereinafter, needle 12 preferably has thereon beveled point 22, with beveled portion 24 being all on one side thereof. It is preferably affixed to body 14 by a standard press fit, such as is well known in the art, although it could be permanently affixed thereto, or have bayonet or screw attachment means, if the use so dictated.

Body 14 preferably has a shape substantially rectangular in cross-section, as disclosed more clearly in FIG 7B, although it could have an oval or other flattened shape to obtain the benefits enumerated hereinafter. The rectangular shape has two short sides 26a and 26b, and two long sides 28a and 28b, thereon. Body 14 has formed therein, preferably into short sides 26a and 26b thereof, three pairs of grooves, 30a and 30b, 32a and 32b, and 34a and 34b, whose function is explained hereinafter. Grooves 30a and 30b have straight sides thereto, while grooves 32a and 32b, and 34a and 34b, are shallow, with sloping sides thereto, as disclosed more clearly in FIG. 2. Bore 36 of body 14 preferably has a shape rectangular in cross-section, to obtain the benefits described hereinafter, although it could be round or, in this case, preferably oval.

Plunger 16 is of a substantially standard structure, except that is has a cross-sectional shape to match that of bore 36, that is, greater in breadth than in height, and preferably rectangular in cross-section. Plunger 16 also has thereon a seal 18 of a resilient material, to prevent any leakage of contained fluid during use of syringe 10.

Protector case 20 contains therein several features which permits the attainment of several benefits. It fits snugly but slidably around the external surface of body 14. To permit the insertion of a deformable block of material around the needle and realize the benefit of rendering the syringe unusable, case 20 preferably has a U-shape thereto, with an open space above the needle. This is disclosed more clearly in FIGS. 7A and 7B, including lips 38a and 38b thereon extending over the edge of body 14 to keep it snugly within case 20. The external shape of case 20 is preferably substantially rectangular in cross-section, to permit stacking and realize the benefits thereof for shipping and storing before use, but it could be oval or elliptical and accomplish most of the same purposes. The internal shape of case 20 is complementary to the external shape of body 14. Case 20 has inwardly projecting fingers 40a and 40b which, in cooperation with grooves 30a and 30b, 32a and 32b, and 34a and 34b, forms a detent means and, in cooperation therewith, define third, first and second positions of body 14 within case 20, respectively.

Case 20 further includes flexible section 40, extending beyond point 22 of needle 12 when syringe 10 is in first and third detent position, providing protection from needle point 22, as explained hereinafter. Flexible section 40 includes upwardly curving portion 42, which has in the end thereof wide V-shaped notch 44. Finally, body 14 includes friction means 41, which could be a simple ridge across the end of body 14, as shown in FIGS. 2A, 2B, 3A, 3B, 4A and 4B, to exert pressure thereon by a finger.

OPERATION OF THE SYRINGE

The operation and features of syringe 10 will now be explained.

As described hereinbefore, syringe body 14 preferably has an external cross-section which is substantially rectangular in shape, to match the internal cross-secion of protector case 20. Body 14 movably slides within protector case 20. When a user selects syringe 10 from a quantity thereof, body 14 will be in first position, as defined by inwardly extending fingers 40a and 40b, resting in grooves 32a and 32b, respectively. Needle 12 will be affixed to body 14 by needle placement equipment (not shown) so that beveled portion 24 of needle 12 will

be facing toward the open space between inwardly extending lips 38a and 38b, for a purpose described hereinafter. The beveled portion can also be oriented toward one of the other sides of the syringe, if desired.

To illustrate the benefits of syringe 10, assume that it will be used for withdrawing blood from a patient, and transferring it to sealed containers such as stoppered test tubes for testing and/or further processing.

To use the syringe, body 14 will be pushed toward its second position, so that needle 12 will be extend through V-shaped notch 44. Body 14 will come to rest when inwardly extending fingers 40a and 40b slide into notches 34a and 34b, respectively. The sloping sides of notches 32a and 32b, and 34a and 34b, permit inwardly extending fingers 40a and 40b to easily slide out of and into said notches, while providing a distinct "detent" feel for users, so that they know when needle 12 has been extended the desired amount for proper insertion into a vein. As anyone knows who has given shots, inserting a needle into a vein can be done with much greater accuracy when beveled portion 24 is facing upwards, so that the point and the hole in the needle can be seen. Because the pre-use placement of needle 12 gives it the desired orientation, the user does not need to rotate it to insure accurate placement thereof. For some purposes, e.g., inserting a needle into the side of a vein, other orientations may be preferred, however, and proper placement of the needle will be facilitated by the substantially rectangular shape.

As needle 12 is inserted into the vein, upwardly sloping portion 42 both encourages the correct angle of insertion, and prevents needle 12 from being inserted too deeply, nose portion 42 will come to rest against the patient's skin at the correct depth of penetration.

When plunger 16 has been withdrawn so as to obtain the desired amount of blood in body 14, the user preferably holds protector case 20 with the thumb and middle finger of one hand, places the forefinger on ridge (or friction means) 41 and, by finger pressure thereon, withdraws body 14 from case 20. When body 14 has been withdrawn to post-use position three, inwardly extending fingers 40a and 40b snap into straight-sided groove 30a and 30b, respectively, while body 14 is being moved to position three, needle 12 is also being withdrawn from the patient, with the sterile surface of upwardly curving portion 42 providing resistance for tender or fragile skin against the withdrawing needle.

Although detent fingers 40a and 40b easily slide across the sloping sides of grooves 32a and 32b, the immovable fit of fingers 40a and 40b in straight-sided grooves 30a and 30b, respectively, prevent the movement of syringe body 14 from position three without the destruction of protector case 20. This feature provides much desired and needed protection against accidental stab wounds by unprotected needles during handling thereof after removal from the patient.

The transfer of blood from syringe 10 to other containers for further processing or testing can now take place easily and safely with the aid of flexible section 40 and upwardly curving section 42 thereof. As disclosed in FIG. 5A, stopper 48 of container 50 is a standard stopper of rubber or other resilient material which can be pierced easily by a needle and yet prevent external contamination. Container 50 is placed in V-shaped notch 44, and pressed transversely to the axis of case 20 and needle 12. Because of the flexible nature of flexible portion 40, it moves aside, allowing stopper 48 to be brought into line with needle 12. Stopper 48 is then pushed against needle 12 by longitudinal pressure on container 50, and is pierced thereby, enabling a desired quantity of blood to be transferred into container 50 by pressure on plunger 16. This procedure can be repeated as often as required, until the requisite number of samples have been obtained. It will be seen immediately by those skilled in the art that this procedure is more convenient than present procedures, and is substantially safer, especially where several samples have to be withdrawn from the same syringe. Extended fingers 52a, 52b, which are not connected to flexible portion 40, provide substantial protection against accidental stabbing, either of self or other nearby parties, by the holder.

This feature of protector case 20 is adaptable to a double-ended needle fixture 54 having a body 56, as disclosed in FIG. 8.

Body 56 is encased in protector case 20, which has some of the same features of the protector case, as described hereinbefore, but with certain changes to facilitate usage in drawing multiple samples sequentially. Body 56 has first end 58 and second end 60, with needles 12a and 12b thereon, respectively. Protector case 20 includes extended portion 45a, which is fixedly attached to first end 58 of body 56, and extended portion 45b, which slides on second end 60. Each of extended portion 45a and 45b has upwardly curving portion 42a and 42b thereon, respectively, with V-shaped notches 44a and 44b therein, again respectively.

In this case, extended portion 45b slides on second end 60 of body 56, to permit insertion of needle 12b into a patient. Portion 45a extends permanently beyond the end of needle 12a, however, to give protected but convenient access thereto, as described hereinbefore, when obtaining multiple specimens from one patient.

Both syringe embodiment 10 and fixture embodiment 54 can easily be made unusable. Block 62 of deformable material is pressed between extending fingers 52a, 52b of the protector case, and some form of external energy, such as heat or microwave energy, is applied thereto, melting and otherwise deforming block 62 around the needle and the end of body 14, rendering syringe 10 unfit for further use.

FIG. 9 discloses a tactile indicator for use by those with vision impairment or in inadequate light. Plunger 16 has affixed thereto extension 64, which extends along exposed external surface 66 of syringe body 14,

between lips 38a and 38b. Extension 64 also has on the tip thereof, knob 68 which mates with depressions 70, impressed into surface 66 of body 14, forming tactile and/or aural detents 72. As the plunger was depressed, the feel or sound of detents 72 would indicate to one experienced in the use thereof the quantity of fluid injected. Surface 66 also could have formed thereon raised symbols, for example, Braille symbols. Detents 72 also could be formed by other means than knobs and depressions.

BRIEF DESCRIPTION OF THE FEATURES OF A SYRINGE IN ACCORDANCE WITH THE PRESENT INVENTION

Briefly, further improvements relate to:

1. an improved cross-sectional shape of the syringe body, reducing shrinkage and/or warpage due to uneven thickness of material (FIG. 10) in accordance with the present invention;
2. an improved structure to the shield or protector case, including;

   a. a stronger structure with less possibility of twisting and/or warpage (FIG. 11);
   b. an improved structure for the flexible nose portion of the original embodiment (FIG. 12);
   c. an improved shape to the nose thereof in second embodiment (FIG. 13);

3. a convenient means of applying identifying indicia to the syringe body (FIG. 14);
4. an improved structure for the one-finger withdrawal feature (FIG. 15);
5. an improved structure for the detent mechanism (FIG. 16);
6. an improved structure for the blood collection embodiment (FIG. 17); and
7. an improved structure to prevent accidental withdrawal of the plunger from the syringe body (FIG. 18).

Turning now to FIGS. 10-17, we see disclosed in greater detail said further improvements.

FIG. 10 discloses an embodiment in accordance with the present invention of improved external shape in cross-section of improved syringe body 14A, which is molded of any of several well-known plastics used in medical products. This embodiment is a horizontal H-shape 15, having extensions 17A-17B extending tangentially outward from the surface of syringe body 14A so that the extremities thereof define a shape conforming to the shaped internal configuration of syringe protector case 20A, which is disclosed here as having a basic horizontal rectangular shape. However, body 14A could have any of a number of external shapes which lend themselves to the requirements of the present invention. For example, extensions 17A-17D could extend radially from body 14A in a flattened X-shape and still remain within the intent of the improvement, which is to inhibit dimensional shrinkage and distortion of the plastic material by providing an substantially uniform thickness of plastic throughout the cross-sectional shape, and providing a uniform sliding friction between plunger 16 and body 14A, and between body 14A and syringe shield or protector case 20A.

FIGS. 11-13 disclose, in longitudinal-section, improved protector case 20A, with several improved features therein giving important advantages over the existing case structure 20:

1. cross-member 19A gives greater lateral support to side-members 21A and 21B. Member 19A, by engaging improved friction means, or finger-engaging boss 18A on the nose-end of body 14A, provides:

   a. a uniform stop in the "USED" position of syringe 10, with needle 12 wholly retracted behind protective case 20A, preventing protector case 20A from further travel toward needle end of body 10 (FIG. 11);

2. improved nose structure 41A, in which forwardly extending side fingers 53A and 53B are separated from flexible section 40, having upwardly-curved portion 42, by slots 43A and 43B. By locating slots 43A and 43B inwardly from inner surfaces 55A and 55B of fingers 53A and 53B, lips 57A and 57B are formed, giving greater lateral support to fingers 53A and 53B (FIG. 12);
3. improved nose shape 57 to protector case 20B provides an embodiment which has certain advantages over the original embodiment with upwardly curving portion 42, as hereinafter discussed more fully (FIG. 13).

FIG. 14 discloses data recording area 59 which can be formed on protector case 20A or 20B, or other configurations thereof, giving easy and convenient means of recording data appropriate to a particular use or patient directly on the syringe involved.

FIG. 15 discloses boss 18a, which provides certain advantages over friction means 41 for the one-finger withdrawal feature. Boss 18a includes, on the nose end thereof, ramps 63a and 63b forming finger stall 65 therebetween. Boss 18a is shaped to permit cross-member 19A to slide over boss 18a during assembly, yet provides a positive stop to prevent removal of protector case 20A without difficulty. Finger stall 65 provides a positive grip to facilitate withdrawal of syringe body 14A and needle 12 into protector case 20A.

FIG. 16 discloses an improved structure of inwardly directed fingers 67A and 67B of the detent mechanism, permitting a substantial decrease in mold complexity

and therefore a decreased cost of manufacture.

FIG. 17 disclose an improved structure for the blood collection embodiment, giving much greater protection to the user. Use of the flexible section 40 permits blood or other fluids to be transferred to one or more receptacles as the occasion requires, without exposing the handler to the contaminated needle.

FIG. 18 discloses an improved structure to the internal bore of the syringe body, with lip 69 preventing accidental withdrawal of plunger 16 from syringe body 14A.

The fixed nose and flexible nose embodiments of the protector case can be combined with the blood collection or the blood transfer embodiments, and the data recording feature can be applied to any of these combinations. The improved detent mechanisms and finger boss can be combined with the other combinations in any appropriate manner.

Claims

1. A medical fixture (54) or syringe (10) for collecting, holding and transferring fluid, including a body (14A) and a protector case (20A), wherein the body (14A) has a first end and a second end with the first end being adapted to receive a needle (12) and has a bore communicating with the first end, and the protector case (20A) slidably containing the body (14A), the body (14A) and the protector case (20A) comprising a detent arrangement (40a,40b;32a,32b;34a,34b) for holding the body (14A) within the protector case (20A) in one position wherein the needle (12) is contained within the protector case (20A) and in another position wherein the needle (12) is extended for use, said body (14A) having exterior axially extending projections or fins (17A,17B,17C,17D) cooperable with, and slidably supporting the body (14A) on the internal surface of the protector case (20A), characterised by the protector case (20A) having an internal rectangular or non-circular cross section, the extremities of the projections or fins (17A,17B,17C,17D) extending outwardly from the surface of the body (14A) defining a shape conforming to the internal cross-section of the protector case (20A), and said protector case (20A) having an external rectangular or non-circular cross section.

2. A fixture (54) or syringe (10) as claimed in Claim 1 in which the cross section of the body (14A) created by the projections or fins (17A,17B,17C,17D) is substantially "H" shaped or "X" shaped.

3. A fixture (54) or syringe (10) as claimed in Claim 1, wherein the protector case (20A) includes lips (38a,38b) extending over edges of the body (14A) forming an open area in the protector case (20A), the protector case having a U-shape, and the protector case (20A) has a stop member (19a) adjacent the open area cooperating with a finger member (18a) on the body (14A) which extends through the open area to assist in preventing removal of the case (20A) from the body (14A).

4. A fixture (54) or syringe (10) as claimed in Claim 1 wherein the detent arrangement includes inwardly extending fingers (40a,40b) on the protector case (20) near one end thereof for engaging grooves (30a,30b;34a,34b) forming detents of the body (14A).

5. A fixture (54) or syringe (10) as claimed in Claim 3 wherein the projections or fins extend outwardly from the body (14A) and comprise four projections or fins (17A,17B,17C,17D), and the projections or fins (17A,17B,17C,17D) include grooves (34a,34b) of the detent arrangement, with the grooves (34a,34b) at the second end of the body (14A) having sloping sides inclined toward the first end of the body (14A) to facilitate release of the fingers (40a,40b) of the protector case (20A) therefrom when moving the protector case (20A) to a position to contain the needle (12), and said stop member (19a) comprises a cross-member (19a) on the protector case (20A) for engaging the finger member (18a), of the body (14A) when the protector case (20A) is extended to cover the needle (12).

6. A fixture (54) or syringe (10) as claimed in Claim 1 wherein the bore of the body (14A) has a plunger (16) therein, and wherein the bore has an oval shape.

7. A fixture (54) or syringe (10) as claimed in Claim 1 wherein the protector case (20A) has a flexible end section (40) providing access to the needle (12) when the needle (12) is contained within the protector case (20A).

8. A fixture (54) or syringe (10) as claimed in Claim 1 wherein the protector case has a data recording area (59) thereon.

9. A medical fixture (54) or syringe (10) for collecting, holding and transferring fluid, including a body (14A) and a protector case (20A), wherein the body (14A) has a first and a second end with the first end being adapted to receive a needle (12), and the protector case (20A) slidably containing the body (14A), the body (14A) and protector case (20A) incorporating a detent arrangement (40a,40b;32a,32b;34a,34b) for holding the body (14A) within the protector case (20A) in one position wherein the needle (12) is contained within the protector case (20A) and another position wherein

the needle (12) is extended for use,

said body (14A) having axially elongated projections or fins (17A,17B,17C,17D) extending outwardly from the body (14A), and wherein the protector case (20A) is slidable on said projections or fins (17A,17V,17C,17D) of said body (14A), characterised by
extremities of said projections or fins (17A,17B,17C,17D) defining an external first rectangular cross-section to the body (14A),
said protector case (20A) having an external second rectangular cross-section, and an internal third rectangular cross-section complementary to said external first rectangular cross-section of said body (14A), and
the protector case (20A) includes side members (21a,21b) having lips (38a,38b) extending over edges of the body (14) forming an open area in the protector case (20A), the protector case having a U-shape and the protector case (20A) has a stop member (19a) adjacent the open area cooperating with a finger member (18a) on the body (14A) which extends through the open area and which can be engaged by a finger of the user to provide a positive stop to assist in preventing removal of the case (20A) from the body (14A).

10. A fixture (54) or syringe (10) as claimed in Claim 9 wherein the cross section of the body (14A) created by the projections or fins (17A,17B,17C,17D) is substantially in the shape of an "H", "X" or the like.

11. The fixture (54) or syringe (10) as claimed in Claim 9 wherein said projections or fins (17A,17B,17C,17D) extend substantially tangential to said body (14A) to define an "H" cross-section.

12. A fixture (54) or syringe (10) as claimed in Claim 9 wherein said projections or fins (17A,17B,17C,17D) extend substantially radially outwardly from the body (14A) and define an "X" shaped cross-section.

13. A fixture (54) or syringe (10) as claimed in Claim 9 wherein the detent arrangement includes inwardly extending fingers (40a,40b) on the protector case (20A) near one end thereof for engaging grooves (30a,30b) forming detents of the body (14A).

14. A fixture (54) or syringe (10) as claimed in Claim 13 wherein the projections or fins (17A,17B,17C,17D) comprise four projections or fins (17A,17B,17C,17D), and the projection or fins (17A,17B,17C,17D) include grooves (34a,34b) of the detent arrangement with the grooves (34a,34b) at the second end of the body (14A) having sloping sides inclined toward the first end of the body (14A) to facilitate release of the fingers (40a,40b) of the protector case (20A) therefrom when moving the protector case (20A) to a position to contain the needle (12), and said stop member (19a) comprises a cross-member (19a) on the protector case for engaging the finger member (18a), of the body (14) when the protector case (20A) is extended to cover the needle (12).

15. A fixture (54) or syringe (10) as claimed in Claim 9 wherein the bore of the body (14A) has a plunger (16) therein, and wherein the bore has an oval shape.

16. A fixture (54) or syringe (10) as claimed in Claim 9 wherein the protector case (20A) has a flexible end section (40) providing access to the needle (12) when the needle (12) is contained within the protector case (20A).

17. A fixture (54) or syringe (10) as claimed in Claim 9 wherein the protector case (20A) has a data recording area (59) thereon.

Patentansprüche

1. Medizinische Fixiereinrichtung (54) oder Spritze (10) zum Abnehmen, Halten und Übertragen einer Flüssigkeit, mit einem Körper (14A) und einem Schutzgehäuse (20A), wobei der Körper (14A) ein erstes Ende und ein zweites Ende, welches erstes Ende zum Aufnehmen einer Nadel (12) ausgebildet ist, und eine Bohrung hat, die mit dem ersten Ende und mit dem den Körper verschiebbar enthaltenden Schutzgehäuse (20A) in Verbindung steht, der Körper (14A) und das Schutzgehäuse (20A) eine Arretierungsanordnung (40a, 40b; 32a, 32b; 34a, 34b) zum Halten des Körpers (14A) in dem Schutzgehäuse (20A) in einer Position, in der die Nadel m dem Schutzgehäuse (20A) enthalten ist, und in einer anderen Position aufweisen, in der die Nadel (12) zum Gebrauch herausgestreckt ist, wobei der Körper (14A) äußere, sich axial erstreckende Vorsprünge oder Stege (17A, 17B, 17C, 17D) hat., die mit dem Körper (14A) zummmenwirken und diesen gleitend auf der Innenfläche des Schutzgehäuses (20A) abstützen, **dadurch gekennzeichnet, daß** das Schutzgehäuse (20A) einen inneren, rechteckigen oder nicht kriesförmigen Querschnitt hat, die Enden der Vorsprünge oder Stege (17A, 17B, 17C, 17D), welche sich außerhalb von der Fläche des Körpers (14A) erstrecken, eine Gestalt festlegen, welche mit dem Innenquerschnitt des Schutzgehäuses (20A) übereinstimmt, und daß das Schutzgehäuse (20A) einen äußeren, rechteckigen oder nicht kreisförmigen Querschnitt hat.

2. Fixiereinrichtung (54) oder Spritze (10) nach

Anspruch 1, **dadurch gekennzeichnet, daß** der Querschnitt des Körpers (14A), welcher durch Vorsprünge oder Stege (17A, 17B, 17C, 17D) gebildet wird, im wesentlichen H- oder X-förmig ausgebildet ist.

3. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 1, **dadurch gekennzeichnet, daß** das Schutzgehäuse (20A) Lippen (38a, 38b) aufweist, die sich über die Kanten des Körpers (14A) erstrekken und in dem Schutzgehäuse (20A) einen offenen Bereich bilden, wobei das Schutzgehäuse eine U-förmige Gestalt hat, und daß das Schutzgehäuse (20A) einen dem offenen Bereich benachbarten und mit einem Finger (18a) an dem Körper (14A) zusammenwirkenden Anschlag (19a) hat, welcher sich über da offenen Bereich erstreckt, um dazu beizutragen, ein Abziehen des Gehäuses (20A) von dem Körper (14A) zu verhindern.

4. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 1, **dadurch gekennzeichnet, daß** die Arretierungsanordnung nach innen sich erstrekkende Finger (40a, 40b) auf dem Schutzgehäuse (20) nahe dessen einem Ende zum Eingriff in Arretierungen des Körpers (14A) bildende Nuten (30a, 30b; 34a, 34b) aufweist.

5. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 3, **dadurch gekennzeichnet, daß** die Vorsprünge oder Stege sich von dem Körper (14A) nach außen erstrecken und vier Vorsprünge oder Stege (17A, 17B, 17C, 17D) vorgesehen sind und daß die Vorsprünge oder Stege (17A, 17B, 17C, 17D) Nuten (34a, 34b) der Arretierungsanordnung umfassen, wobei die Nuten (34a, 34b) am zweiten Ende des Körpers (14A) zum ersten Ende des Körpers (14A) geneigte Seiten haben, um ein Freigeben der Finger (40a, 40b) des Schutzgehäuses (20A) zu erleichtern, wenn das Schutzgehäuse (20A) in eine Position zum Fassen der Nadel (12) bewegt wird, und daß der Anschlag (19a) einen Querkörper (19a) auf dem Schutzgehäuse (20A) für den Eingriff des Fingers (18a) des Körpers (14A) aufweist, wenn das Schutzgehäuse (20A) zum Abdecken der Nadel (12) verlängert ist.

6. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 1, **dadurch gekennzeichnet, daß** die Bohrung des Körpers (14A) einen Preßkolben (16) aufnimmt und daß die Bohrung eine ovale Gestalt hat.

7. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 1, **dadurch gekennzeichnet, daß** das Schutzgehäuse (20A) einen flexiblen Endabschnitt (40) aufweist, welcher einen Zugang zur Nadel (12) ermöglicht, wenn die Nadel (12) in dem Schutzgehäuse (20A) enthalten ist.

8. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 1, **dadurch gekennzeichnet, daß** das Schutzgehäuse einen Daten aufnehmenden Bereich (59) aufweist.

9. Medizinische Fixiereinrichtung (54) oder Spritze (10) zum Abnehmen, Halten und Übertragen einer Flüssigkeit, mit einem Körper (14A) und einem Schutzgehäuse (20A), wobei der Körper (14A) ein erstes und ein zweites Ende hat, das erste Ende zum Aufnehmen einer Nadel (12) ausgebildet ist, und das Schutzgehäuse (20A) den Körper (14A) gleitend aufnimmt, in den Körper (14A) und das Schutzgehäuse (20A) eine Arretierungsanordnung (40a, 40b; 32a, 32b; 34a, 34b) zum Halten des Körpers (14A) in dem Schutzgehäuse (20A) in einer ersten Position, in der die Nadel (12) im Schutzgehäuse (20A) enthalten ist, und in einer zweiten Position, in der die Nadel (12) zum Gebrauch herausgestreckt ist, eingearbeitet ist,
wobei der Körper (14A) axiale, längliche, sich außerhalb des Körpers (14A) erstreckende Vorsprünge oder Stege (17A, 17B, 17C, 17D) hat und wobei das Schutzgehäuse (20A) auf den Vorsprüngen oder Stegen (17A, 17B, 17C, 17D) des Körpers (14A) verschiebbar ist,
dadurch gekennzeichnet, daß

die Enden der Vorsprünge oder Stege (17A, 17B, 17C, 17D) an dem Körper (14A) einen äußeren, ersten, rechteckigen Querschnitt festlegen,
das Schutzgehäuse (20A) einen äußeren, zweiten, rechteckigen Querschnitt und einen inneren, dritten, rechteckigen Querschnitt hat, welcher zu dem äußeren, ersten, rechteckigen Querschnitt des Körpers (14A) komplementär ist, und
daß das Schutzgehäuse (20A) Seitenteile (21a, 21b) mit Lippen (38a, 38b) aufweist, die sich über die Kanten des Körpers (14) erstrekken und einen offenen Bereich im Schutzgehäuse (20A) bilden, das Schutzgehäuse eine U-förmige Gestalt hat und daß das Schutzegehäuse (20A) nahe dem offenen Bereich einen mit einem Finger (18a) am Körper (14A) zusammenwirkenden Anschlag (19a) hat, welcher Finger sich durch den offenen Bereich erstreckt und durch einen Finger des Benutzers beaufschlagt werden kann, um einen positiven Anschlag zu bilden und ein Abziehen des Gehäuses (20A) von dem Körper (14A) zu verhindern.

10. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 9, **dadurch gekennzeichnet, daß** der

durch die Vorsprünge oder Stege (17A, 17B, 17C, 17D) gebildete Querschnitt des Körpers (14A) im wesentlichen eine H- oder X-förmige Gestalt oder dergleichen hat.

11. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 9, **dadurch gekennzeichnet, daß** die Vorsprünge oder Stege (17A, 17B, 17C, 17D) sich im wesentlichen tangential zu dem Körper (14A) erstrecken und einen H-förmigen Querschnitt festlegen.

12. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 9, **dadurch gekennzeichnet, daß** die Vorsprünge oder Stege (17A, 17B, 17C, 17D) sich im wesentlichen radial außerhalb des Körpers (14A) erstrecken und einen X-förmigen Querschnitt festlegen.

13. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 9, **dadurch gekennzeichnet, daß** die Arretierungsanordnung nach innen sich erstrekkende Finger (40a, 40b) auf dem Schutzgehäuse (20A) nahe dessen einem Ende zum Eingriff in Arretierungen des Körpers (14A) bildende Nuten (30a, 30b) aufweist.

14. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 13, **dadurch gekennzeichnet, daß** die Vorsprünge oder Stege (17A, 17B, 17C, 17D) vier Vorsprünge oder Stege (17A, 17B, 17C, 17D) aufweisen und die Vorsprünge oder Stege (17A, 17B, 17C, 17D) Nuten (34a, 34b) der Arretierangsanorduung umfassen, wobei die Nuten (34a, 34b) am zweiten Ende des Körpers (14A) zum ersten Ende des Körpers (14A) geneigte Seiten haben, um ein Freigeben der Finger (40a, 40b) des Schutzgehäuses (20A) zu erleichtern, wenn das Schutzgehäuse (20A) in eine Position zum Fassen der Nadel (12) bewegt wird, und daß der Anschlag (19a) einen Querkörper (19a) auf dem Schutzgehäuse (20A) für einen Eingriff mit dem Finger (18a) des Körpers (14A) aufweist, wenn das Schutzgehäuse (20A) zum Abdecken der Nadel (12) verlängert ist.

15. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 9, **dadurch gekennzeichnet, daß** die Bohrung des Körpers (14A) einen Preßkolben (16) aufnimmt und daß die Bohrung eine ovale Gestalt hat.

16. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 9, **dadurch gekennzeichnet, daß** das Schutzgehäuse (20A) einen flexiblen Endabschnitt (40) aufweist, welcher einen Zugang zur Nadel (12) ermöglicht, wenn die Nadel (12) in dem Schutzgehäuse (20A) enthalten ist.

17. Fixiereinrichtung (54) oder Spritze (10) nach Anspruch 9, **dadurch gekennzeichnet, daß** das Schutzgehäuse einen Daten aufnehmenden Bereich (59) aufweist.

Revendications

1. Un appareil médical fixe (54) ou une seringue (10) destiné(e) à recueillir, contenir et transférer du fluide, comprenant un corps (14A) et un boîtier de protection (20A), dans lequel/laquelle le corps (14A) présente une première extrémité et une seconde extrémité, la première extrémité étant adaptée pour recevoir une aiguille (12) et étant dotée d'un alésage communiquant avec la première extrémité, et le boîtier de protection (20A) contenant le corps de façon coulissante (14A), le corps (14A) et le boîtier de protection (20A) comprenant une disposition de détentes (40a, 40b ; 32a, 32b ; 34a, 34b) pour maintenir le corps (14A) à l'intérieur du boîtier de protection (20A) dans une position dans laquelle l'aiguille (12) est contenue à l'intérieur du boîtier de protection (20A), et dans une autre position, dans laquelle l'aiguille (12) est sortie pour utilisation, ledit corps (14A) présentant des projections ou des ailettes s'étendant vers l'extérieur sur un plan axial (17A, 17B, 17C, 17D) qui peuvent coopérer avec, et qui supportent le corps (14A) de façon coulissante sur la surface intérieure du boîtier de protection (20A), caractérisé(e) en ce que le boîtier de protection (20A) présente une section transversale intérieure rectangulaire ou non-circulaire, les extrémités des projections ou ailettes (17A, 17B, 17C, 17D) s'étendant vers l'extérieur depuis la surface du corps (14A) en définissant une forme qui s'adapte à la section transversale intérieure du boîtier de protection (20A), et ledit boîtier de protection (20A) présentant une section transversale extérieure rectangulaire ou non-circulaire.

2. Un appareil médical fixe (54) ou une seringue (10) selon la revendication 1, dans lequel/laquelle la section transversale du corps (14A) créée par les projections ou ailettes (17A, 17B, 17C, 17D) présente une forme substantiellement en H ou en X.

3. Un appareil fixe (54) ou une seringue (10) selon la revendication 1, dans lequel/laquelle le boîtier de protection (20A) comprend des lèvres (38a, 38b) qui s'étendent au-delà des bords du corps (14A) en formant une zone ouverte dans le boîtier de protection (20A), le boîtier de protection (20A) présentant une forme en U et le boîtier de protection (20A) comportant un élément de blocage (19a) adjacent à la zone ouverte coopérant avec un élément de doigt (18a) sur le corps (14A) qui s'étend à travers la zone ouverte pour contribuer à empêcher le

retrait du boîtier de protection (20A) du corps (14A).

4. Un appareil fixe (54) ou une seringue (10) selon la revendication 1, dans lequel/laquelle la disposition de détentes comprend des doigts faisant saillie vers l'intérieur (40a, 40b) sur le boitier de protection (20) à proximité d'une extrémité de celui-ci pour s'engager dans des rainures (30a, 30b ; 34a, 34b) formant des détentes du corps (14A).

5. Un appareil fixe (54) ou une seringue (10) selon la revendication 3, dans lequel/laquelle les projections ou ailettes s'étendent vers l'extérieur depuis le corps (14A) et comprennent quatre projections ou ailettes (17A, 17B, 17C, 17D), et les projections ou ailettes (17A, 17B, 17C, 17D) comprennent des rainures (34a, 34b) de la disposition de détente, les rainures (34a, 34b) au niveau de la seconde extrémité du corps (14A) présentant des côtés inclinés vers la première extrémité du corps (14A) pour faciliter la libération des doigts (40a, 40b) du boîtier de protection (20A), lorsque le boîtier de protection (20A) est déplacé en une position pour contenir l'aiguille (12), et ledit élément de blocage (19a) comporte un élément transversal (19a) sur le boîtier de protection (20A) pour s'engager dans l'élément de doigt (18a) du corps (14A) lorsque le boîtier de protection (20A) est sorti pour couvrir l'aiguille (12).

6. Un appareil fixe (54) ou une seringue (10) selon la revendication 1, dans lequel/laquelle l'alésage du corps (14A) comporte un piston (16) et dans lequel/laquelle l'alésage présente une forme ovale.

7. Un appareil fixe (54) ou une seringue (10) selon la revendication 1, dans lequel/laquelle le boîtier de protection (20A) comporte une section d'extrémité souple (40) fournissant un accès à l'aiguille (12) lorsque l'aiguille (12) est contenue à l'intérieur du boîtier de protection (20A).

8. Un appareil fixe (54) ou une seringue (10) selon la revendication 1, dans lequel/laquelle le boîtier de protection (20A) comporte sur celui-ci une zone d'inscription d'informations (59).

9. Un appareil médical fixe (54) ou une seringue (10) destiné(e) à recueillir, contenir et transférer du fluide, comprenant un corps (14A) et un boîtier de protection (20A), dans lequel/laquelle le corps (14A) présente une première extrémité et une seconde extrémité, la première extrémité étant adaptée pour recevoir une aiguille (12) et le boîtier de protection (20A) contenant le corps de façon coulissante (14A), le corps (14A) et le boîtier de protection (20A) comprenant une disposition de détentes (40a, 40b ; 32a, 32b ; 34a, 34b) pour maintenir le corps (14A) à l'intérieur du boîtier de protection (20A) dans une position, dans laquelle l'aiguille (12) est contenue à l'intérieur du boîtier de protection (20A) et dans une autre position dans laquelle l'aiguille (12) est sortie pour utilisation, ledit corps (14A) présentant des projections ou des ailettes (17A, 17B, 17C, 17D) allongées axialement, s'étendant vers l'extérieur depuis le corps (14A), et dans lequel/laquelle le boîtier de protection (20A) peut coulisser sur lesdites projections ou ailettes (17A, 17B, 17C, 17D) dudit corps (14A), caractérisé(e) en ce que

les extrémités desdites projections ou ailettes (17A, 17B, 17C, 17D) définissent une première section transversale extérieure rectangulaire du corps (14A),
ledit boîtier de protection (20A) comporte une seconde section transversale extérieure rectangulaire et une troisième section transversale intérieure rectangulaire complémentaire à ladite première section transversale extérieure rectangulaire dudit corps (14A), et en ce que
le boîtier de protection (20A) comporte des éléments latéraux (21a, 21b) présentant des lèvres (38a, 38b) qui s'étendent au-delà des bords du corps (14A) en formant une zone ouverte dans le boîtier de protection (20A), le boîtier de protection (20A) présentant une forme en U et le boîtier de protection (20A) comportant un élément de blocage (19a) adjacent à la zone ouverte coopérant avec un élément de doigt (18a) sur le corps (14A) qui s'étend à travers la zone ouverte et dans lequel peut être engagé un doigt de l'utilisateur pour fournir un blocage positif afin de contribuer à empêcher le retrait du boîtier (20A) du corps (14A).

10. Un appareil fixe (54) ou une seringue (10) selon la revendication 9, dans lequel/laquelle la section transversale du corps (14A) créée par les projections ou ailettes (17A, 17B, 17C, 17D) présente une forme substantiellement en H, X ou équivalent.

11. Un appareil fixe (54) ou une seringue (10) selon la revendication 9, dans lequel/laquelle lesdites projections ou ailettes (17A, 17B, 17C, 17D) s'étendent sur un plan substantiellement tangentiel au dit corps (14A) pour définir une section transversale en H.

12. Un appareil fixe (54) ou une seringue (10) selon la revendication 9, dans lequel/laquelle lesdites projections ou ailettes (17A, 17B, 17C, 17D) s'étendent vers l'extérieur sur un plan substantiellement radial depuis ledit corps (14A) et définissent une forme de section transversale en X.

13. Un appareil fixe (54) ou une seringue (10) selon la revendication 9, dans lequel/laquelle la disposition de détentes comprend des doigts faisant saillie vers l'intérieur (40a, 40b) sur le boîtier de protection (20A) à proximité d'une extrémité de celui-ci pour s'emboîter dans des rainures (30a, 30b) qui forment des détentes du corps (14A).

14. Un appareil fixe (54) ou une seringue (10) selon la revendication 13, dans lequel/laquelle les projections ou ailettes (17A, 17B, 17C, 17D) comprennent quatre projections ou ailettes (17A, 17B, 17C, 17D), et les projections ou ailettes (17A, 17B, 17C, 17D) comprennent des rainures (34a, 34b) de la disposition de détentes, les rainures (34a, 34b) au niveau de la seconde extrémité du corps (14A) présentant des côtés inclinés vers la première extrémité du corps (14A) pour faciliter la libération des doigts (40a, 40b) du boîtier de protection (20A) de celui-ci, lorsque le boitier de protection (20A) est déplacé en une position pour contenir l'aiguille (12), et ledit élément de blocage (19a) comporte un élément transversal (19a) sur le boîtier de protection (20A) pour engager l'élément de doigt (18a) du corps (14A) lorsque le boîtier de protection (20A) est sorti pour couvrir l'aiguille (12).

15. Un appareil fixe (54) ou une seringue (10) selon la revendication 9, dans lequel/laquelle l'alésage du corps (14A) comporte un piston (16) et dans lequel/laquelle l'alésage présente une forme ovale.

16. Un appareil fixe (54) ou une seringue (10) selon la revendication 9, dans lequel/laquelle le boîtier de protection (20A) comporte une section d'extrémité souple (40) fournissant un accès à l'aiguille (12) lorsque l'aiguille (12) est contenue à l'intérieur du boîtier de protection (20A).

17. Un appareil fixe (54) ou une seringue (10) selon la revendication 9, dans lequel/laquelle le boîtier de protection (20A) comporte sur celui-ci une zone d'inscription d'informations (59).

FIG. 1

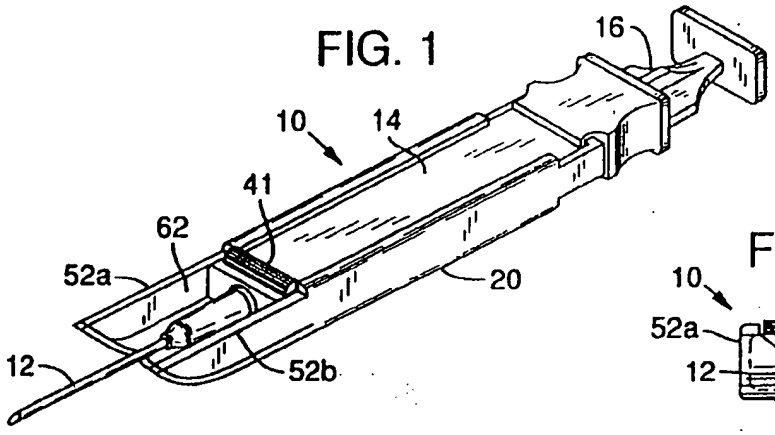


FIG. 6

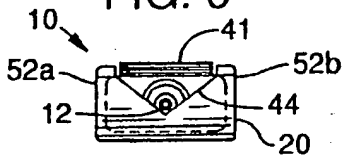


FIG. 3A

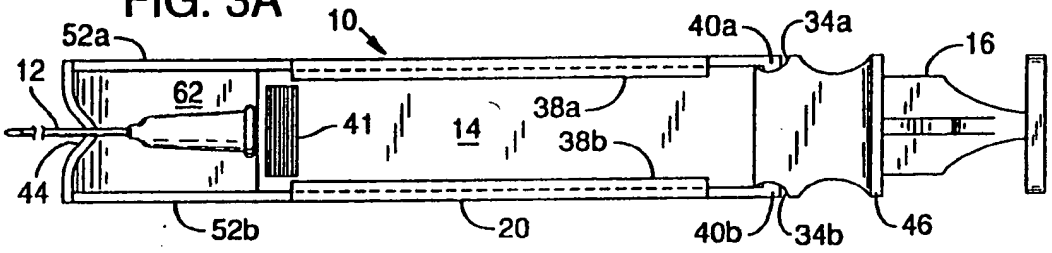


FIG. 3B

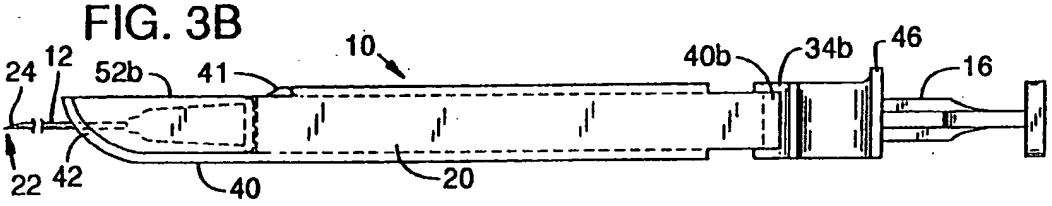


FIG. 7A

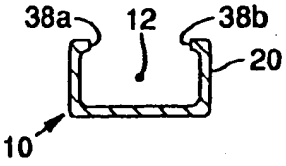


FIG. 7B

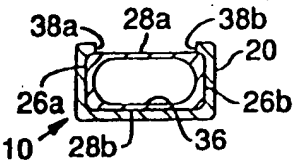


FIG. 7C

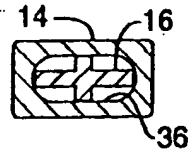


FIG. 7D

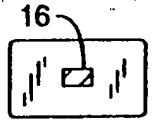
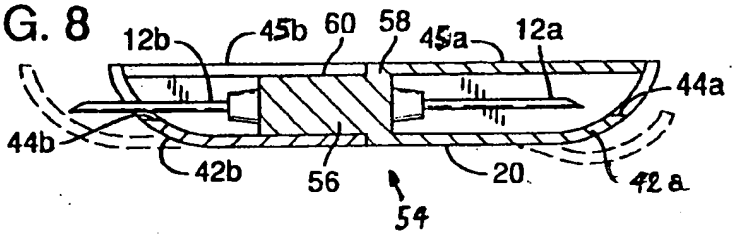


FIG. 8



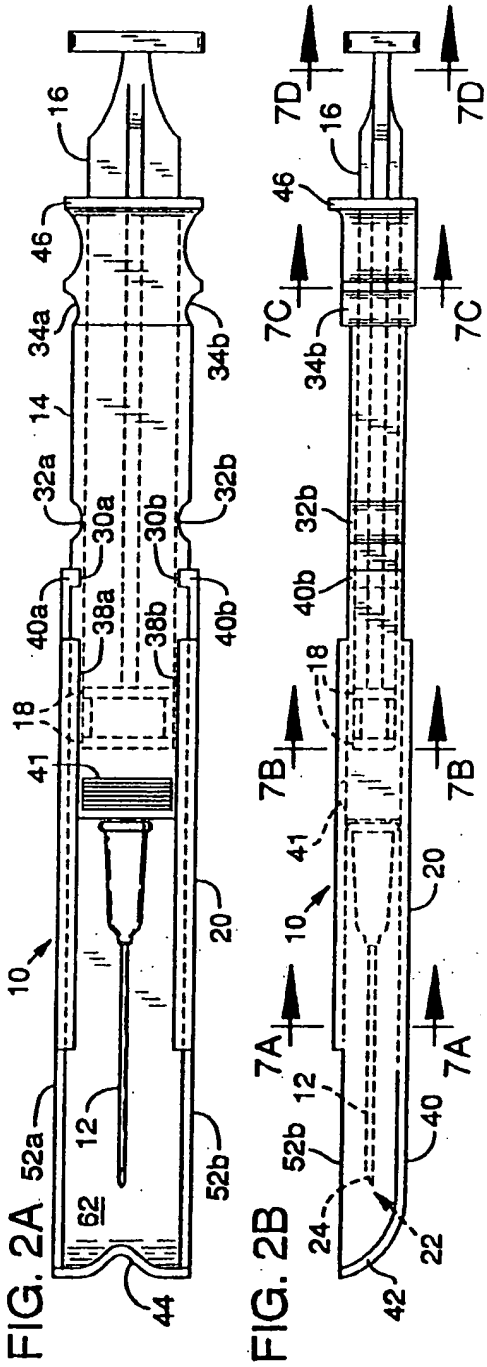


FIG. 2A

FIG. 2B

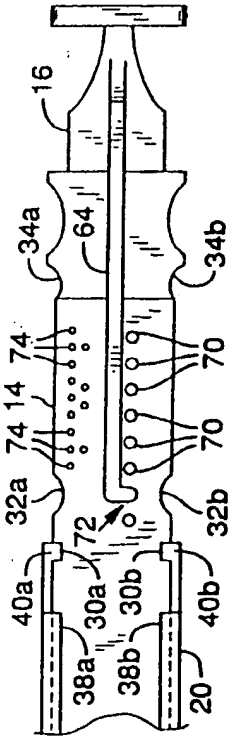


FIG. 9A

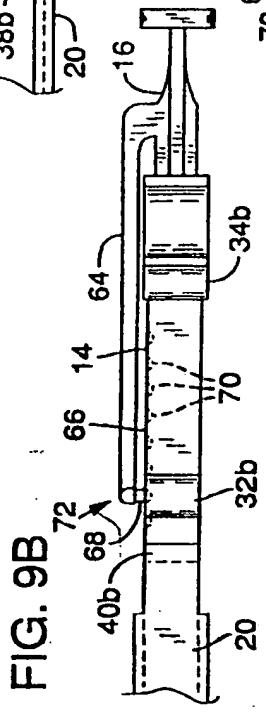


FIG. 9B

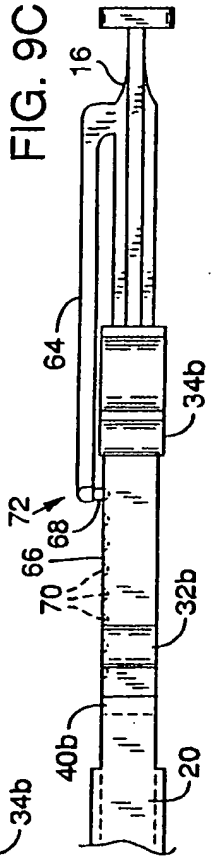


FIG. 9C

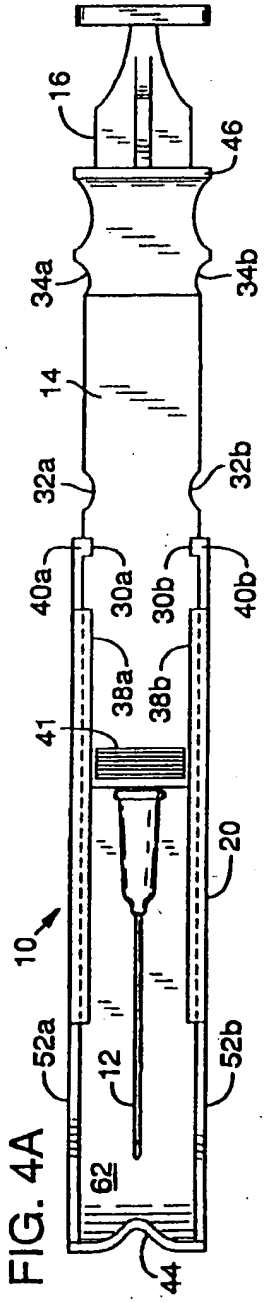


FIG. 4A

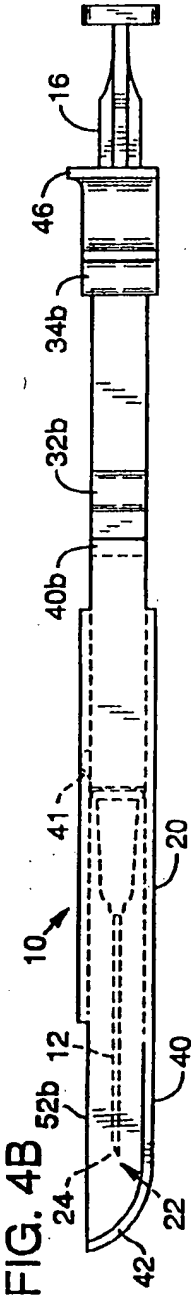


FIG. 4B

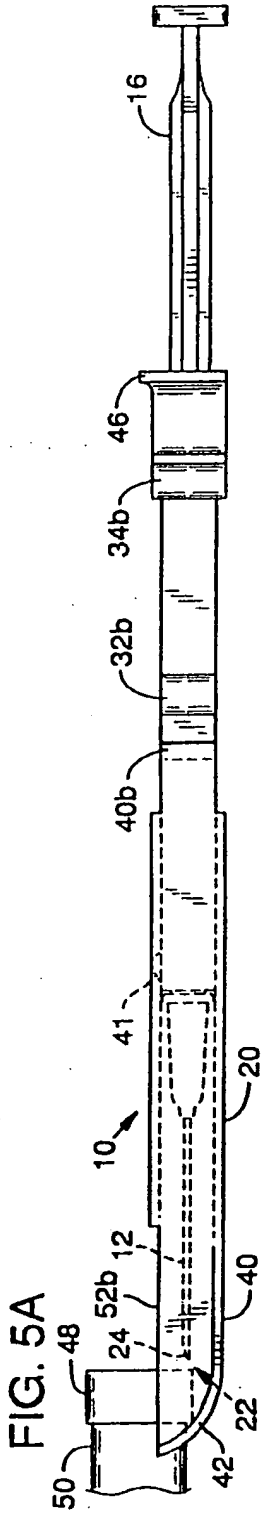


FIG. 5A

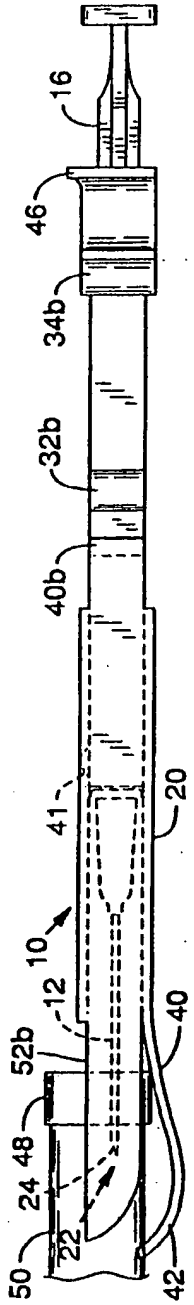


FIG. 5B

FIG. 10

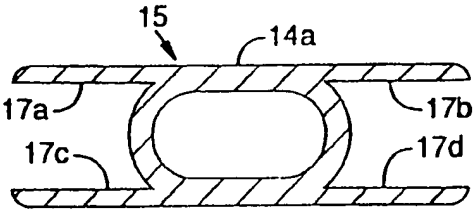


FIG. 11

FIG. 12

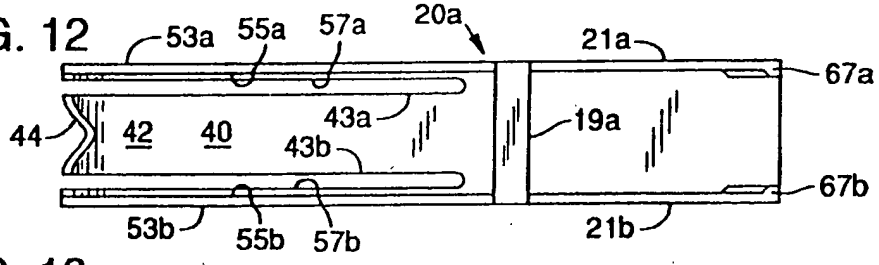


FIG. 13

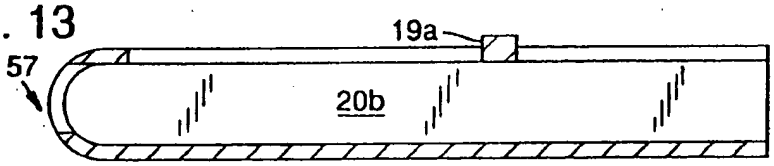


FIG. 14

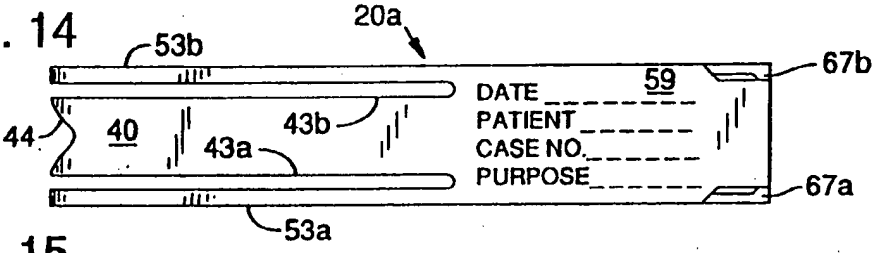


FIG. 15

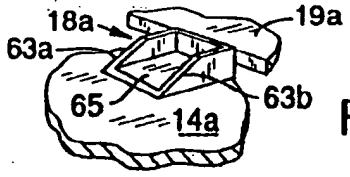


FIG. 16

FIG. 17

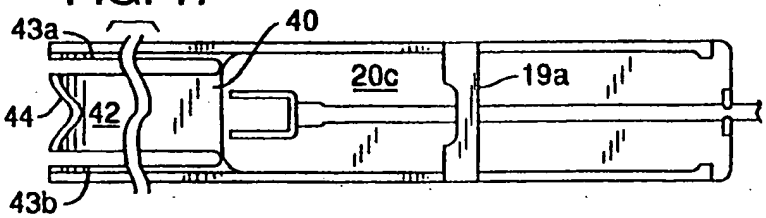


FIG. 18

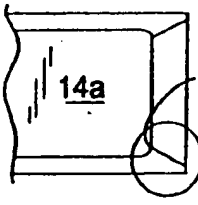


FIG. 18A